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Some Ferns of Dutchess County, New York

PAUL C. STANDLEY.¹

The latter part of August and the early half of September, 1915, the writer and Mr. H. C. Bollman spent camping at Clove in southern Dutchess County, New York, upon the farm of Mr. P. H. Christie. Much of the writer's time was given to collecting plants and he found many of interest to him, especially since he had never before had an opportunity to botanize so far north. While the area explored was not very large, a number of rather rare plants were discovered, as well as several which show slight extensions of range, judging from the lately published *Flora of the Vicinity of New York*. Thirty-six species of ferns and fern allies were observed, surely a large number for any area of the same size in temperate North America, and probably others were overlooked. While none of the species are rare, it seems worth while to publish some record of them, especially since two represent southward extensions of range, according to Miss Slosson's treatment of the group in the work just mentioned.

The settlement of Clove occupies the broad, open valley of one of the heads of Fishkill Creek, which runs southward. Abruptly on the east and west rise two ranges of low mountains. The writer collected chiefly on the East Mountain, as it is called. This, like most

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similar mountains of the regions, is well wooded, at least on the sides, while its summit is broad and flat, embracing large areas of open meadows, broken by numerous marshes or outcroppings of polished rocks. Many springs issue from the sides of the mountain and, uniting with streamlets from the marshes, fall down over mossy boulders hidden in the shade of chestnuts, oaks, elms, and other deciduous trees. It is along these wooded ravines that ferns are most abundant, but some, like *Dryopteris Thelypteris* and *D. Clintoniana*, prefer the wooded swamps of the valley, where in September great beds of fringed gentians spread a sheet of blue. The royal fern frequents chiefly the dark blueberry swamps which lie high up on the mountains, but it, too, sometimes descends to the valley. These upland swamps, which were brightened by the crimson leaves of the swamp maple and sometimes by the scarlet berries of mountain holly, occupy hollows on the mountain sides, shut in, often, by huge walls of rocks. Above and around them stretch acres of scrub-oak thickets which exactly simulate the oak thickets which occupy the summits of some of the lower mountains in New Mexico, the resemblance being accentuated by the scattered pines which rise here and there.

The following is a list of the ferns and their relatives which were collected or observed, all in the immediate vicinity of Clove. A visit was made one day to the Shawangunk Mountains of Ulster County, where there have been found *Asplenium Bradleyi* and other rare ferns, but during the brief time spent there only some of the very common species were noticed.

1. *POLYPODIUM VULGARE* L. Common on rocks and in rich shaded soil nearly everywhere.

2. *ADIANTUM PEDATUM* L. Very abundant, the fronds reaching a large size. Some of the young plants strikingly suggest the fronds of *A. Capillus-Veneris*.

3. *PTERIDIUM AQUILINUM* (L.) Kuhn. Abundant on hillsides and in open mountain meadows.

4. *ASPLENIUM TRICHOMANES* L. This was found in but one or two localities and only a few small plants were found each time, growing on moist cliffs in the woods.

5. *ASPLENIUM PLATYNEURON* (L.) Oakes. The ebony spleenwort, frequently so abundant, is apparently far from common here, being seen in only a few places. It was noticed in one locality upon a stone wall along a lane. Thriving individuals were also observed on the rocks lining an old well.

6. *ATHYRIUM THELYPTEROIDES* (Michx.) Desv. Very abundant in rich woods, and one of the most common ferns of the region.

7. *ATHYRIUM FILIX-FEMINA* (L.) Roth. Not very common, apparently, but some atypical, much reduced plants were collected.

8. *CAMPTOSORUS RHIZOPHYLLUS* (L.) Link. The walking leaf is as local here as elsewhere. A fine colony was observed on some boulders lying among hemlocks on an eastward slope. A few plants were found in another locality on a small mossy boulder lying in a brook.

9. *POLYSTICHUM ACROSTICHOIDES* (Michx.) Schott. The common form of the Christmas fern is abundant. The writer collected plants, however, which afford an excellent example of entropic homoeosis, as defined by Mr. R. G. Leavitt.¹ In these plants the pinnae have all been variously modified. In some of the fronds they are merely deeply toothed; in others they are pinnately cleft nearly to the midvein, and in some the two basal auricles have developed into pinnules, while the rest of the pinna is toothed. In a few fronds the sterile basal pinnae are truly pinnate, reproducing exactly the form of a normal frond. Even more striking are

¹R. G. Leavitt. A vegetation mutant, and the principle of homoeosis in plants. Bot. Gaz. 47: 30-68. 1909.

some of the fertile terminal pinnae, which, also, are pinnate, each pinna thus simulating a normal frond. On one frond there are six terminal pinnae thus metamorphosed. Only one clump of this interesting form of *Polystichum acrostichoides* was found, growing with typical plants.

10. *DRYOPTERIS HEXAGONOPTERA* (Michx.) C. Chr. Widely dispersed in moist woods. In Gray's New Manual it is stated that in this species the blades are "usually broader than long," while in *D. polypodioides* they are "longer than broad," but the statement for *D. hexagonoptera* does not hold in this locality, where many of the fronds were longer than broad.

11. *DRYOPTERIS DRYOPTERIS* (L.) Christ. The oak fern was found in some abundance in a damp ravine, growing among moss along with *Lycopodium lucidulum*. In the recent Flora of the Vicinity of New York it is stated that in New York this fern is not known south of the Catskills, consequently the present record is a slight extension of range.

Mr. H. Woyнар has pointed out in a letter to Mr. Maxon, and it also is shown in Christensen's Supplement to the Index Filicum,¹ that the binary name *Dryopteris Dryopteris* was published before the appearance of the second edition of Britton and Brown's Illustrated Flora, where it was proposed as new.²

12. *DRYOPTERIS THELYPTERIS* (L.) A. Gray. Common in swamps and marshes.

13. *DRYOPTERIS NOVEBORACENSIS* (L.) A. Gray. Well distributed, but not very abundant, in rich woods.

14. *DRYOPTERIS MARGINALIS* (L.) A. Gray. One of the common ferns of this locality. The writer was impressed by the fact that the fronds were much larger

¹P. 32.

²1: 23. 1913.

than in the plants of certain Missouri localities at which he has observed the species.

15. *DRYOPTERIS CRISTATA* (L.) A. Gray. Seen only once, a few plants growing in a swamp under red maples and poison sumac.

16. *DRYOPTERIS CLINTONIANA* (D. C. Eaton) Dowell. This, also, was found but once, growing with the preceding, but more abundant.

17. *DRYOPTERIS INTERMEDIA* (Muhl.) A. Gray. Common in damp woods.

18. *FILIX BULBIFERA* (L.) Underw. Very abundant and well developed, on moist rocks along brooks, the fronds freely bulbiferous.

19. *FILIX FRAGILIS* (L.) Underw. Much less common than the preceding.

20. *WOODSIA OBTUSA* (Spreng.) Torr. Occasional on rather exposed rocks.

21. *DENNSTAEDTIA PUNCTILOBULA* (Michx.) Moore. Very abundant, some of the fronds reaching a large size.

22. *ONOCLEA SENSIBILIS* L. Common. One colony of the plants was extensively infested by a fungus which Prof. W. G. Farlow has identified as *Uredinopsis mirabilis* (Cke.) P. Magn.

23. *PTERETIS NODULOSA* (Michx.) Nieuwland.¹ *Onoclea nodulosa* Michx. Fl. Bor. Amer. 2: 272. 1803, excluding synonyms; *Matteuccia nodulosa* Fernald, Rhodora 10: 164. 1915; *Matteuccia Struthiopteris* and *Onoclea Struthiopteris* of American authors, not *Osmunda Struthiopteris* L.

In the recently published Flora of the Vicinity of New York the New York range of this species is given as "The region of the Catskills, in Delaware and Greene counties." The writer, however, found it growing abundantly in a wooded swamp near Clove, along with *Dryopteris cristata* and *D. Clintoniana*. He also saw

¹ Amer. Midl Nat. 4: 334. 1916.

cultivated plants said to have been brought from Dover Plains in the Harlem Valley.

Fernald has shown recently¹ that the American ostrich fern is specifically different from that of Europe, and has restored to it its first distinctive name, applied originally by Michaux. Other early writers, like Willdenow, Desvaux, and Lowe, also considered it a valid species, although recent American and European botanists have taken it for granted that the European and American forms were conspecific. In distinguishing the two species Fernald, however, evidently overlooked a recent paper by Nieuwland² in which that writer has shown that the proper generic name for the ostrich ferns is *Pteretis* Raf., rather than *Matteuccia* Todaro. The latter name, which has received wide recognition in recent years, was published in 1866, but it is antedated by that of Rafinesque by 48 years. There is no doubt as to the validity of *Pteretis*. Rafinesque publishes it in the second instalment of his caustic review of Pursh's Flora,³ which appeared in 1818. Upon page 268 of that work we find the following: "137. *Struthiopteris*, Willd. is abominable, should *Pteris* stand, being formed of two coupled names, *Struthio* and *Pteris*; and at all events it is bad, therefore *Pteretis* may be substituted." It thus appears that the type of the genus is *Struthiopteris germanica* Willd. The European species should be known as *Pteretis Struthiopteris* (L.) Nieuwland, and the American one as *P. nodulosa* (Michx.) Nieuwland.

24. OSMUNDA REGALIS L. Abundant in swamps, especially in those high up upon the mountains.

25. OSMUNDA CLAYTONIANA L. Common.

26. OSMUNDA CINNAMOMEA L. More common, perhaps, than the last, and often growing with it. The plants in this locality seem remarkably uniform.

¹Rhodora 17: 161-164. 1915.

²Amer. Midl. Nat. 3: 194-197. 1914.

³Amer. Monthly Mag. 2: 265-269. 1818.

27. *BOTRYCHIUM OBLIQUUM* Muhl. Observed in several localities, usually in open pastures but once in a swamp. Probably the plants were abundant, for when one was noticed careful search always revealed others in the immediate vicinity.

28. *BOTRYCHIUM DISSECTUM* Spreng. Reduced plants referable to this species were collected in an open hill-side pasture. In the specimens collected the differences between this and the last preceding seem very slight and hardly specific.

29. *BOTRYCHIUM VIRGINIANUM* (L.) Sw. Scattered plants were frequent in the moist woods.

30. *EQUISETUM ARVENSE* L. Rather common in damp shaded soil of the valley.

31. *EQUISETUM HYEMALE ROBUSTUM* (A. Br.) A. A. Eaton. Observed in several localities about pools of water.

32. *LYCOPodium LUCIDULUM* Michx. Rather abundant in deep ravines, at the foot of cliffs.

33. *LYCOPodium OBSCURUM* L. Apparently rare, for it was seen in a single locality.

34. *LYCOPodium COMPLANATUM FLABELLIFORME* Fernald. Very abundant, especially in birch thickets, where it was the most conspicuous herbaceous plant.

35. *SELAGINELLA RUPESTRIS* (L.) Spring. This was very abundant in one locality on some wide expanses of worn rocks in a pasture near the summit of a mountain. Growing with it were *Polygonum tenue* and *Sarothra gentianoides*.

36. *SELAGINELLA APODA* (L.) Fernald. Among moss in open marshes, among *Drosera*, *Parnassia*, and other bog plants.

WASHINGTON, D. C.